

What is claimed is:

1. A popularity degree calculation method for calculating a popularity degree indicating the height
5 of a popularity of a document in a network, comprising:
extracting the document updated or collected during a first time period; and
calculating the popularity degree for each extracted document.
10
2. The popularity degree calculation method according to claim 1, wherein the popularity degree is calculated based on both a link relation of each of the extracted documents and document location information
15 indicating a location in the network of each of the documents.
3. The popularity degree calculation method according to claim 2, wherein the popularity degree is
20 calculated based on features of a character string describing the document location information.
4. The popularity degree calculation method according to claim 1, further comprising:
25 calculating a popularity transition degree

indicating both a direction and a degree of transition of the popularity degree for each of the extracted documents.

- 5 5. The popularity degree calculation method according to claim 4, wherein the popularity transition degree is calculated based on a popularity degree calculated during a second time period.
- 10 6. The popularity degree calculation method according to claim 4, further comprising:
calculating a regression equation against a time of the popularity degree calculated during the second time period,
- 15 wherein the popularity transition degree is calculated according to the regression equation.
7. The popularity degree calculation method according to claim 6, wherein the popularity transition
20 degree is calculated based on a regression coefficient of the regression equation.
8. The popularity degree calculation method according to claim 7, further comprising:
- 25 determining transition tendency against the time

of the popularity degree, based on an intercept of the regression equation.

9. The popularity degree calculation method
5 according to claim 4, further comprising:

determining an order of each document in the extracted documents, based on the popularity degree calculated during the second time period; and

calculating a regression equation against a time
10 of the order during the second time period,
wherein the popularity transition degree is calculated based on the regression equation.

10. A document relation judgment method for judging
15 a relation between documents in a network, comprising:

extracting a link relation from a first document;
and

judging whether a second document linked to by the first document is a non-text document related to
20 contents of the first document, based on the link relation.

11. The document relation judgment method according to claim 10, further comprising:

25 extracting a character string located in the

vicinity of a part which the first document is linking
to the second document, from the first document,

wherein it is judged whether the second document
is the non-text document related to the contents of the
5 first document, based on the character string.

12. The document relation judgment method according
to claim 11, wherein if the character string includes
a specific character string, it is determined that the
10 second document is the non-text document related to the
contents of the first document.

13. The document relation judgment method according
to claim 10, wherein it is judged whether the second
15 document is the non-text document related to the
contents of the first document, based on an extension
of a file name of the second document.

14. The document relation judgment method according
20 to claim 13, wherein if the extension is not a specific
extension, it is determined that the second document
is not the non-text document related to the contents
of the first document.

25 15. The document relation judgment method according

to claim 10, wherein it is judged whether the second document is the non-text document related to the contents of the first document, based on whether the second document is used a prescribed number of times
5 or more in the first document.

16. The document relation judgment method according to claim 15, wherein if the second document is used the prescribed number of times or more in the first document,
10 it is determined that the second document is not the non-text document related to the contents of the first document.

17. The document relation judgment method according to claim 15, wherein if the second document is used less
15 than the prescribed number of times in the first document, it is determined that the second document is the non-text document related to the contents of the first document.

20 18. The document relation judgment method according to claim 10, further comprising:

not registering the second document in a database as the non-text document related to the contents of the first document, if the first document includes a third
25 document with a file name similar to a file name of the

second document and if the file name of the second document is ranked lower than the file name of the third document in a dictionary order.

5 19. The document relation judgment method according to claim 10, further comprising

judging, if there is a fourth document linked to by the second document, whether the second document is the non-text document related to the contents of the
10 first document, based on both document location information about the first document indicating location in the network of the document and document location information about the second document.

15 20. The document relation judgment method according to claim 19, wherein it is judged whether the second document is the non-text document related to the contents of the first document, based on both the document location information about the first document
20 and document location information about the fourth document.

21. The document relation judgment method according to claim 10, wherein if a fifth document is linked to
25 by the second document and if a server address or a domain

in each of the document location information about the second document indicating location in the network of the document and document location information about the fifth document is different from a server address
5 or a domain in document location information about the first document, it is determined that the second document is not the non-text document related to the contents of the first document.

10 22. A service type judgment method for judging a type of a service provided by a document in a network, comprising:

extracting a tag designating user input from the document; and

15 judging the type of the service provided by the document, based on the tag designating user input.

23. The service type judgment method according to claim 22, further comprising:

20 determining that the document provides no service, if the document includes no tag designating user input.

24. The service type judgment method according to claim 22, wherein the service type provided by the
25 document is judged based on the description of a button

included in the document.

25. The service type judgment method according to claim 22, wherein the service type provided by the document is judged based on a user input area included in the document.

26. A computer-readable storage medium that stores a program for enabling a computer to calculate a popularity degree indicating the height of a popularity of a document in a network, the process comprising:

extracting the document updated or collected during a first time period; and

calculating the popularity degree for each of the extracted document.

27. The storage medium that stores a program for enabling the computer to execute a process according to claim 26, the process further comprising:

calculating a popularity transition degree for indicating both a direction and a degree of the popularity degree of the document, based on the popularity degree calculated during a second time period.

25

28. The storage medium that stores a program for enabling the computer to execute a process according to claim 26, the process further comprising:

calculating a regression equation against the
5 time of the popularity degree calculated during the second time period; and

calculating the popularity transition degree for indicating both a direction and a degree of transition of the popularity degree of the document, based on the
10 regression equation.

29. The storage medium that stores a program for enabling the computer to execute a process according to claim 28, wherein the popularity transition degree
15 is determined based on a regression coefficient of the regression equation.

30. The storage medium that stores a program for enabling the computer to execute a process according
20 to claim 28, further comprising:

determining a tendency of transition against the time of the popularity degree, based on the regression equation.

25 31. A computer-readable storage medium that stores

a program for enabling a computer to judge a relation between documents in a network, the process comprising:

extracting a link relation from a first document;

and

- 5 judging whether a second document linked to by the first document is non-text content related to the contents of the first document, based on the link relation.

- 10 32. A computer-readable storage medium that stores a program for enabling a computer to judge a type of a service provided by a document in a network, the process comprising:

extracting a tag for designating user input from

- 15 the document; and

judging the type of the service provided by the document, based on the tag designating user input.

33. A document retrieval method for searching for a
20 document in a network, comprising:

collecting documents from the network;

extracting documents updated or collected during a first time period;

- calculating a popularity degree indicating the
25 height of a popularity of each of the extracted

documents;

retrieving the document meeting retrieval conditions from the collected documents, based on the retrieval conditions;

5 ranking the retrieved documents, based on the popularity degree; and

outputting information about the retrieved documents, based on the ranking result.

10 34. The document retrieval method according to claim 33, further comprising:

calculating a popularity transition degree for indicating both a direction and a degree of the transition of the popularity degree for the document;

15 and

adding information about the popularity transition degree to information about the retrieved documents.

20 35. The document retrieval method according to claim 33, further comprising:

judging whether another document linked to by the document is a non-text document related to the contents of the document, based on the link relation; and

25 adding the information about the related non-text

document to the information about the retrieved documents.

36. The document retrieval method according to claim
5 35, further comprising:

embedding the information about the related
non-text document into the related non-text document.

37. The document retrieval method according to claim
10 33, further comprising:

extracting a tag designating user input from the
document;

judging a type of a service provided by the
document, based on the tag designating user input; and

15 adding the information about the service type to
the information about the retrieved documents.

38. The document retrieval method according to claim
33, further comprising:

20 receiving from a user registration of both
document location information indicating location in
the network of a specific document and a value; and

notifying the user of the fact that a popularity
degree has reached the value, if the popularity degree
25 for the document specified by the document location

information has reached the value.

39. A document retrieval apparatus for searching for a document in a network, comprising:

5 a collection unit collecting documents from the network;

a popularity degree calculation unit extracting documents updated or collected during a first time period as calculation targets of a popularity degree
10 indicating the height of a popularity and calculating the popularity degree of each of the extracted documents; and

a retrieval service unit retrieving a document meeting retrieval conditions from the collected
15 documents, based on the retrieval conditions, ranking the retrieved documents, based on the popularity degree and outputting information about the retrieved documents, based on the ranking result.

20 40. An area information document retrieval apparatus for searching for documents about an area in a network, comprising:

a collection unit collecting documents from the network and extracting a link relation from each of the
25 collected documents;

a popularity degree calculation unit extracting documents updated or collected during a first time period as calculation targets of a popularity degree indicating the height of a popularity and calculating
5 the popularity degree of each of the extracted documents;

a popularity degree transition calculation unit calculating a popularity transition degree for indicating both a direction and a degree of transition
10 of the popularity degree, based on the popularity degree calculated during a second time period;

a related non-text contents judgment unit judging whether a document linked to by each collected document is a non-text document related to the contents of each
15 collected document, based on a link relation between the collected documents;

a service type judgment unit extracting a tag for designating user input from each of the collected documents and judging a type of a service provided by
20 the document, based on the tag for designating user input;

a sorting unit hierarchically sorting the collected documents for each area; and

a retrieval service unit searching for the
25 documents sorted for each of the area names, based on

an area name designated by a user, ranking the retrieved documents, based on the popularity degree and outputting information about the popularity transition degree of the retrieved documents, information about the related
 5 non-text document and information about a service type provided by the retrieved documents, based on the ranking result, in addition to information about the content of the retrieved documents.

10 41. A computer data signal embodied in a carrier wave, for expressing a program for enabling a computer to calculate a popularity degree indicating the height of a popularity of a document in a network, the process comprising:

15 extracting documents updated or collected during a first time period; and

calculating the popularity degree of each of the extracted documents.

20 42. A computer data signal embodied in a carrier wave, for expressing a program for enabling a computer to judge a relation between documents in a network, the process comprising:

extracting a link relation from a first document;
 25 and

judging whether a second document linked to by the first document is a non-text document related to contents of the first document, based on the link relation.

5

43. A computer data signal embodied in a carrier wave, for expressing a program for enabling a computer to judge a type of a service provided by a document in a network, the process comprising:

10 extracting a tag for designating user input from the document; and

judging the type of the service provided by the document, based on the tag designating user input.